SADDLE LAKE

Perry County

2005 Fish Management Report

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EXECUTIVE SUMMARY

- A general lake survey was completed at Saddle Lake on July 11 and July 18, 2005. An aquatic vegetation survey was also conducted on August 12.

- The Secchi disk reading was 10.5 ft and dissolved oxygen concentrations were adequate for fish survival to a depth of 16.0 ft. Submersed aquatic vegetation was found to a maximum depth of 14.0 ft. Chara was the dominant vegetation, followed by naiad spp., waterthread pondweed, and sago pondweed.

- A total of 243 fish, representing six species and one hybrid, was collected during this survey. Largemouth bass ranked first by number, followed by bluegill, and redear sunfish.

- For the first time since the largemouth bass slot limit was established, bass outnumber bluegill. The largemouth bass electrofishing catch rate increased 24% since 2000 to 228.0/h, which is high for a slot limit lake. Growth was poor when compared to the district's average at other slot limit lakes with all ages below one standard deviation of the average. The bluegill population has substantially decreased since the 2000 survey. This is supported by a decreased electrofishing catch rate, fast growth during the 2005 season, and changes in relative abundance. Predatory and angling pressure are the most likely causes of the decline in the bluegill population. Additional harvest of small bass will be necessary for any significant improvement in the fishery.

- The Division of Fish and Wildlife should maintain the 12 to 15-in slot limit and 5 fish bag limit on largemouth bass and continue to stock 656 (16/acre), 8 to 12 in channel catfish every two years.

INTRODUCTION

Saddle Lake is a 41-acre impoundment constructed in 1966. The lake is in the Hoosier National Forest, 12 mi N of Tell City. Saddle Lake is the smallest of the four impoundments along the Middle Fork of the Anderson River. The U.S. Forest Service maintains a concrete boat ramp. Shore fishing is most popular around the boat ramp.

In 1976, a largemouth bass 14-in minimum size limit was established to prevent overharvest and to maintain predatory pressure on panfish. By 1980, bass had begun to "stockpile" under the 14-in minimum size limit. Therefore, the size limit was changed to a 12 to 15-in slot size limit on October 21, 1986 to remedy the stockpiled bass situation. Under the new regulation, anglers could only harvest bass less than 12 in and greater than 15 in. Other fish management activities consisted of a supplemental redear sunfish stocking in 1994 and biennial channel catfish stockings from 1994 to 2004.

In 1997, the fishery was in its best shape since 1993 (Carnahan 1998). The largemouth bass electrofishing catch rate was 209.0/h, the bluegill electrofishing catch rate increased to 1,042.0/h, and the redear sunfish catch rate increased to 30.0/h. One concern was that the large increase in the bluegill population would cause bluegill growth to decline. The 2000 survey showed a substantial decrease in bluegill catch rates while largemouth bass catch rates remained similar to 1997 (Carnahan 2001). Redear sunfish catch rates increased and redear exhibited excellent growth. At that time, it only took three years for redear to reach 8 in TL.

METHODS

The current survey was conducted on July 11 and 18, 2005, as part of the Division of Fish and Wildlife (DFW) Work Plan 202478, to monitor bluegill, largemouth bass, and redear sunfish abundances and growth. Some of the lake's physical and chemical characteristics were measured according to standard guidelines (Indiana DFW 2001). Submersed aquatic vegetation was sampled on August 12, 2005 using guidelines written by Pearson (2004). A GPS was used to record the location of the limnological data collection site, aquatic vegetation sample sites, and fish sample sites.

Fish collection effort consisted of pulsed DC night electrofishing with two dippers for 0.50 h. Three experimental-mesh gill nets and two trap nets were also fished overnight. All fish collected were measured to the nearest 0.1 in TL. Average weights for fish by half-inch groups

for Fish Management District 7 were used to estimate the weight of all collected fish. Scale samples were taken from bluegill, largemouth bass, and redear sunfish for age and growth analysis. Proportional stock density (PSD) and relative stock density (RSD) were calculated for largemouth bass (Anderson and Neumann 1996). An accurate PSD and RSD could not be calculated for bluegill due to the low number of stock size fish sampled.

RESULTS

Saddle Lake was clear with a Secchi disk reading of 10.5 ft. Dissolved oxygen concentrations were adequate for fish survival to a depth of 16.0 ft. Submersed aquatic vegetation was found to a maximum depth of 14.0 ft. Chara was the dominant vegetation, followed by naiad spp., waterthread pondweed, and sago pondweed.

A total of 243 fish, representing six species and one hybrid, was collected during the survey that weighed approximately 76.35 lbs. By number, largemouth bass ranked first (51%), bluegill ranked second (35%), and redear sunfish ranked third (10%) in the survey sample. By weight, largemouth bass ranked first (61%) followed by redear sunfish (16%) and channel catfish (15%). Other species sampled were warmouth and yellow bullhead. One hybrid sunfish was also sampled.

A total of 124 largemouth bass was sampled that weighed an estimated 46.82 lbs. They ranged in length from 1.5 to 16.4 in. The largemouth bass electrofishing catch rate was 240.0/h. Electrofishing catch rates for bass 10.0 to 14.9 in long have steadily increased since 1993 (Table 1). Growth was poor when compared to the district's average at other slot limit lakes with all ages below one standard deviation of the average. The largemouth bass PSD increased from 18 (2000) to 29. The largemouth bass RSD14 increased from 3 (2000) to 5, and the largemouth bass RSD15 remained the same at 3.

Eighty-four bluegill were sampled that weighed an estimated 4.26 lbs. They ranged in length from 1.1 to 8.8 in. The bluegill electrofishing catch rate was 52.0/h. Previous electrofishing catch rates were 349.0 (1996), 1,042.0 (1997), and 214.0/hr (2000). The gill net and trap net catch rates were 0.3 and 28.5/lift. In 2000, gill net and trap net catch rates were 2.0 and 1.0/lift. Bluegill growth was at the low end of the district average for ages 1 and 2, and similar to 2000 growth. Growth for other ages could not be calculated due to the small sample size.

A total of 24 redear sunfish was sampled that weighed an estimated 11.91 lbs. They ranged in length from 3.1 to 10.7 in. The redear sunfish electrofishing catch rate was 22.0/h. Previous electrofishing catch rates were 11.0 (1996), 30.0 (1997), and 62.0/h (2000). The gill net and trap net catch rates were 0.7 and 5.5/lift. In 2000, no redear were sampled in gill nets and the trap net catch rate was 19.0/lift. Redear growth for all ages has declined since 2000 and was average when compared to the district averages.

Four channel catfish were sampled that weighed an estimated 11.20 lbs. They ranged in length from 19.0 to 25.7 in. The channel catfish gill net catch rate was 1.0/lift.

DISCUSSION

Bass outnumber bluegill for the first time since the largemouth bass slot limit was established. The electrofishing catch rate for all bass increased 24% since 2000 to 228.0/h, which is high for a slot limit lake. Broken down by length group, the catch rate for bass less than 8.0 in and 12.0 to 14.9 in have increased 59% and 107%. These fish are either too small to harvest or protected from harvest. Catch rates for bass that are prone to harvesting (8.0 to 11.9 in and greater than 14.9 in) have not changed since 2000. The largemouth bass PSD increased due to the increase in slot size fish, but remains below the recommended range for a balanced bass fishery. Largemouth bass growth has remained stable since 1996, indicating the catch rate increase has not affected growth. Under a slot limit, largemouth bass growth will normally improve. This has not occurred at Saddle Lake. Growth is well below the average of other slot limit lakes in the district.

The bluegill population has substantially decreased since the 2000 survey. This is supported by a decreased electrofishing catch rate and changes in relative abundance. The electrofishing catch rate decreased 75% since 2000 and is the lowest since the slot limit was established. The bluegill relative abundance by weight has decreased by nearly 50% while the relative abundance by number has only decreased 2% since 2000. This indicates that the majority of the bluegill sampled were small. Predatory and angling pressure are the most likely causes of the decline in the bluegill population. Additional harvest of small bass will be necessary for any significant improvements in the fishery.

Redear sunfish growth is slower than all previous surveys but average for southwest Indiana. In 2000, it only took three years for redear to reach 8.0 in; currently redear do not reach 8.0 in until age 5. The largest redear collected was 10.7 in.

The channel catfish gill net catch rate of 1.0/lift indicates they are being harvested. The biennial stocking should continue.

RECOMMENDATIONS

- The DFW should maintain the 12 to 15-in slot limit and 5 fish bag limit on largemouth bass at Saddle Lake.

- The DFW should continue to stock 656 (16/acre), 8 to 12 in channel catfish every two years with the next stocking scheduled for 2006.

LITERATURE CITED

Anderson, R. O., and R. M. Neumann. 1996. Length, weight, and associated structural indices. Pages 447-481 *in* B. R. Murphy and D. W. Willis, editors. Fisheries techniques, 2nd edition. American Fisheries Society, Bethesda, Maryland.

Carnahan, D. P. 1998. Saddle Lake fish management report. Indiana Department of Natural Resources. Indianapolis. 13 pp.

Carnahan, D. P. 2001. Saddle Lake fish management report. Indiana Department of Natural Resources. Indianapolis. 13 pp.

Indiana Division of Fish and Wildlife. 2001. Manual of fisheries survey methods. Indiana Department of Natural Resources. Indianapolis. 67 pp.

Pearson, J. 2004. A proposed sampling method to assess occurrence, abundance and distribution of submersed aquatic plants in Indiana lakes. Indiana Department of Natural Resources. Indianapolis. 37 pp.

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APPENDIX 1
FISH MANAGEMENT SURVEY DATA